

**CLAIMS**

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

- 1        1. A systematic modeling methodology for information personalization in an information system which automatically adjusts information content, structure, and presentation to an individual user comprising the steps of:
  - 2                modeling information-seeking interaction sequences with the information system wherein each interaction sequence denotes a possible dialog between the user and the information system;
  - 3                programmatically representing the interaction sequences in a computer program;
  - 4                creating a personalization system by partial evaluation of the computer program to produce a simplified program; and
  - 5                generating a personalized information space for the user in a user interface from the simplified program.
- 6        2. The systematic modeling methodology for information personalization in an information system recited in claim 1, wherein a dialog in the step of modeling is a task-oriented information-seeking activity involving a list of information-seeking aspects comprising structural aspects specified by the user and terminal aspects as responses by the information system to the specified structural aspects.
- 7        3. The systematic modeling methodology for information personalization in an information system recited in claim 2, wherein the step of generating a computer program comprises the steps of:
  - 8                defining a program variable for each structural aspect, called structural variables;

6 defining a program variable for each terminal aspect, called terminal  
7 variables;

8 organizing the set of interaction sequences in terms of conditional  
9 elements on structural variables, using constructs provided in a  
10 programming language;

11 declaring all structural variables to be parameters in the program;  
12 and

13 if an interaction sequence produces values for terminal aspects,  
14 assigning values for respective terminal variables in corresponding  
15 programmatic representation.

1 4. The systematic modeling methodology for information personalization in  
2 an information system recited in claim 1, further comprising the step of  
3 compacting interaction sequences to determine a new set of interaction  
4 sequences having fewer states prior to the step of programmatically  
5 representing the interaction sequences in a computer program.

1 5. The systematic modeling methodology for information personalization in  
2 an information system recited in claim 1, wherein the step of creating a  
3 personalization system by partial evaluation of the computer program uses  
4 a source-to-source transformation engine that simplifies the computer  
5 program for static values of some program variables.

1 6. The systematic modeling methodology for information personalization in  
2 an information system recited in claim 1, wherein the step of generating a  
3 personalized information space for the user in a user interface is performed  
4 by mapping from the simplified program to the information space, in terms  
5 of a technology corresponding to the information system.

1       7. The systematic modeling methodology for information personalization in  
2       an information system recited in claim 6, wherein the information-seeking  
3       interaction of the user is by means of a browser.

1       8. The systematic modeling methodology for information personalization in  
2       an information system recited in claim 7, wherein the user interface is a  
3       browser window displaying an information space and a partial input  
4       specification window for facilitating user interaction.

1       9. The systematic modeling methodology for information personalization in  
2       an information system recited in claim 7, wherein the browser supports a  
3       browsing hierarchy, said step of modeling being performed using a nested  
4       programmatic model.

1       10. The systematic modeling methodology for information personalization  
2       in an information system recited in claim 7, wherein the user interface  
3       comprises two windows, a first window allowing the user to proceed with  
4       an interaction along lines initiated by the information system and a second  
5       window allowing the user to take an initiative and personalize the  
6       interaction by specifying some aspect out-of-turn.

1       11. The systematic modeling methodology for information personalization  
2       in an information system recited in claim 1, wherein the user can specify  
3       any aspect out-of-turn, further comprising the step of partially evaluating  
4       the program with respect to values for structural program variables.

1       12. The systematic modeling methodology for information personalization  
2       in an information system recited in claim 7, further comprising the steps of:  
3               when a user specifies information-seeking aspects, representing the  
4               information-seeking aspects as values for structural program variables;

- 5                    performing a partial evaluation with respect to the structural
- 6                    program variables; and
- 7                    converting a resulting program back to the information space.